CLAIMS

1. A computer-implemented method of rendering data for producing a full parallax autostereoscopic display of a digital scene, comprising the steps of:

defining an image plane that passes through at least a portion of said scene;

dividing the image plane into a plurality of contiguous image elements;

simulating two camera frustra on opposing sides of said image plane, each camera frustrum having an associated eyepoint;

defining a near clipping plane of said frustra on said image plane;

for each image element, determining a distance between said eyepoint and said near clipping plane that would avoid near clipping of said scene, thereby determining a set of near clipping plane distances;

positioning said camera frustra along said z axis in accordance with one or more of said near clipping plane distances;

generating, for each of said elements, image data for each of said cameras; and

combining said image data, thereby rendering said scene.

2. The method of Claim 1, wherein the method is performed to produce holograms, and wherein said generating step provides holographic image data.

3. The method of Claim 1, wherein said positioning step provides a single near clipping plane distance for all of said elements.

4. The method of Claim 1, wherein said positioning step provides near clipping plane distances within a predetermined range.

5. The method of Claim 1, further comprising the step of identifying degenerate elements for which said determining step will not result in avoiding clipping.

6. The method of Claim 5, wherein the method is performed to produce a hologram, and further comprising the step of rendering image data for said degenerate elements by special compositing of images from said camera frustra.

7. The method of Claim 5, further comprising the step of rendering image data for said degenerate elements by repositioning said camera frustra in a direction parallel to said image plane.

8. The method of Claim 1, wherein said scene is comprised of polygons, and said determining step compares z vertices of said polygons with a z distance of said clipping plane.

9. The method of Claim 1, further comprising the step of evaluating said image data for depth resolution and compensating said image data based on said evaluating step.

10. A full parallax autostereoscopic print of a digital scene, whose image data is rendered according to the following steps:

defining an image plane that passes through at least a portion of said scene;

dividing the image plane into a plurality of contiguous image elements;

simulating two camera frustra on opposing sides of said image plane, each camera frustrum having an associated eyepoint;

defining a near clipping plane of said frustra on said image plane;

for each image element, determining a distance between said eyepoint and said near clipping plane that would avoid near clipping of said scene, thereby determining a set of near clipping plane distances;

positioning said camera frustra along said z axis in accordance with one or more of said near clipping plane distances;

generating, for each of said elements, image data for each of said cameras; and

combining said image data, thereby rendering said scene.

11. A computer-readable medium whose contents cause a computer system to render image data for a full parallax autostereoscopic display, by performing the steps of:

defining an image plane that passes through at least a portion of said scene;

dividing the image plane into a plurality of contiguous image elements;

simulating two camera frustra on opposing sides of said image plane, each camera frustrum having an associated eyepoint;

defining a near clipping plane of said frustra on said image plane;

for each image element, determining a distance between said eyepoint and said near clipping plane that would avoid near clipping of said scene, thereby determining a set of near clipping plane distances;

positioning said camera frustra along said z axis in accordance with one or more of said near clipping plane distances;

generating, for each of said elements, image data for each of said cameras; and

combining said image data, thereby rendering said scene.

12. A computer-implemented method of rendering data for producing a full parallax autostereoscopic display of a digital scene, said scene having one or more reflective polygon-based objects, comprising the steps of:

defining an image plane that passes through at least a portion of said scene;

dividing the image plane into a plurality of contiguous image elements;

simulating two camera frustra on opposing sides of said image plane, each camera frustrum having an associated eyepoint;

defining a near clipping plane of said frustra on said image plane;

locating reflective objects having polygons closer than a predetermined distance to said eyepoint;

reducing the size of polygons located in said locating step;

generating, for each of said elements, image data for each of said cameras; and

combining said image data, thereby rendering said scene.

13. The method of Claim 12, wherein said reducing step is performed such that the size of said polygons decreases with the distance between said polygon and said near clipping plane.

14. The method of Claim 12, wherein said reducing step is performed such that the size of said polygons decreases with the distance between said polygon and said near clipping plane and such that the dimensions of said polygons and of said near clipping plane are maintained at a substantially constant ratio.

15. The method of Claim 12, wherein said reducing step is performed such that the dimensions of said polygons such that the ratio between the largest of said dimensions and of an edge of said near clipping plane are approximately 1:10.

16. A full parallax autostereoscopic print of a digital scene, said scene having one or more reflective objects, and the scene being represented by image data according to the following method:

defining an image plane that passes through at least a portion of said scene;

dividing the image plane into a plurality of contiguous image elements;

simulating two camera frustra on opposing sides of said image plane, each camera frustrum having an associated eyepoint;

defining a near clipping plane of said frustra on said image plane;

locating reflective objects having polygons closer than a predetermined distance to said eyepoint;

reducing the size of polygons located in said locating step;

generating, for each of said elements, image data for each of said cameras; and

combining said image data, thereby rendering said scene.

17. A computer-readable medium whose contents cause a computer system to render image data for a full parallax autostereoscopic display of a scene having one or more reflective objects, by performing the steps of:

defining an image plane that passes through at least a portion of said scene;

dividing the image plane into a plurality of contiguous image elements;

simulating two camera frustra on opposing sides of said image plane, each camera frustrum having an associated eyepoint;

defining a near clipping plane of said frustra on said image plane;

locating reflective objects having polygons closer than a predetermined distance to said eyepoint;

reducing the size of polygons located in said locating step;

generating, for each of said elements, image data for each of said cameras; and

combining said image data, thereby rendering said scene.